Introduction

Silego
GreenPAK

By Willis Lutz
GreenPAK Features

- Development Kit and 50 MCU $49
- Real of 100 MCU is $24
- One Time Programmable chip
- Logic & Mixed Signal circuits
- Highly Versatile Macro Cells
- 3.3V supply
- Absolute Maximum conditions:
  - Vdd = 3.6V
  - Voltage on pin = 4.6V
  - current at pin = 1 mA
- High-Level Output Current 16 mA
- Low-Level Output Current 40 mA
- Logic Cell current
  - PWM 15.9uA
  - RC Oscillator 19uA to 196uA
- Propagation Delay 25 ns
Pin Characteristics

GreenPAK I chip has five PGIO (PIN3,4,6,7,8) and one GPI (PIN2) pin modules. These modules can be configured to work in the following modes:

Digital in
Digital in with Schmitt trigger
Low voltage digital in
Analog I/O
Push-pull
Push-pull double current
Open drain
Open drain double current
Macro Cells

- Pulse Width Modulator (PWM)
- 8-Bit Successive Approximation Analog to Digital Converter (SAR ADC)
- Serial to Parallel Converter (S2P)
- Power-On Reset Device (POR)
- Voltage Reference (VREF)
- RC Oscillator (RC OSC)
- 3 Counter/Delay Generators (CNT/DLY)
- 3 D Flip-Flop/Latches (DFF)
- 2 Digital Comparators (DCMP)
- 2 Analog Comparators (ACMP)
- 7 Combinatorial Lookup Tables (LUT)
- Configurable I/O Pins (Open Drain, Push-Pull, Schmitt Trigger Input, Low Voltage Digital Input and Analog I/O)
Software
Testing Your Program
Before You Burn
Programing the Chip
Soldering

- Solder by hand with soldering iron
- Use stencil and apply solder paste to board
- Apply solder paste with knife
- Pay someone else to do it
Solder By Hand
Use Stencil To Apply Paste
Heating Board to Harden Solder Paste
Reflow Oven Characteristics

Kester Reflow Profile
Alloy: Sn63Pb37 or Sn62Pb36Ag02

- Pre-heating Zone: (2.0-4.0 min. max.)
  - Soaking Zone: (2.0 min. max.)
    - Reflow Zone: (30-90 sec. max.)
      - Peak Temp.: 210 - 225°C

Temperature (°C)

Time (sec.)
View of Component As It Is Heated

Before heating, then after some warming when it starts to look worse

Solder starting to melt, continuing left to right:
Apply Solder Paste With Knife
Reflow Oven
Solder Paste

- Solder has lead in it
- Must be refrigerated all the time
- When you purchase it you get a lot
- It can cost a lot of money
Pay Someone Else To Do It

**ePBoard Express Soldering Service:**

- Order IC adapters from our shopping cart.
- Send the ICs to us (attention to our Soldering Service Department) along with a copy of your order email.
- Once upon receiving it, we will solder your ICs on the adapters within **ONE working day**! Test and return the completed units to you from your selected shipping method.